

**Remarks:**

Claims 39, 60, 70, 76, 87, 94 and 98 have been amended. Claims 1-38, 40, 47-55 and 77 were previously cancelled. Accordingly, claims 39, 41-46, 56-76 and 78-98 are currently pending for consideration.

**I. Amendments:**

Amended claims 39, 60, 70, 76, 87 and 94 now recite that the amino resin and hardener components are applied to a substrate of a gluelam or laminated timber and the amino resin is selected from the group consisting of MF and MUF. Support for these amendments can be found throughout the specification and specifically in the specification at page 1, lines 8-9; page 2, lines 16-19; the examples and originally filed claim 10. No new matter has been added.

Claim 98 was amended to correct a typographical error. No new matter has been added.

**II. The Invention:**

The presently claimed invention relates to a method of applying an amino resin gluing system to a substrate. In one aspect, the invention is directed to applying an amino resin and hardener to a gluelam or laminated timber, in the form of strands. In one embodiment, the amino resin is selected from the group consisting of MF and MUF and the hardener is a volatile acid and is either free from filler or includes filler in an amount of less than 20% by weight. Applicants have found that when the amount of filler in the amino resin adhesive is kept below 20%, as claimed, delamination is greatly reduced, as shown in Example 1.

**III. Rejections:**

**35 USC §112 Rejections:**

In the Office Action at pages 5-6, claim 94 was separately rejected under 35 USC §112, first paragraph, as failing to comply with the written description requirement and 35 USC §112, second paragraph, as being indefinite. Regarding written description, the Office Action contends that there is only support for application of the hardener on top of the resin in the form of strands. Regarding the claim being indefinite, the Office Action contends that language "the later applied strands ..." and "previously applied strands" lacks antecedent basis.

Applicants respectfully submit that these rejections have been overcome by the amendment to claim 94, which clarifies that the hardener and resin are applied in the form of strands.

Accordingly, it is respectfully requested the rejections of claim 94 under 35 USC §112, first paragraph, and 35 USC §112, second paragraph, be withdrawn.

35 USC §103(a) Rejections:

On pages 6-7, the Office Action rejects claims 39, 41-45, 56-59, 70-76, 78-82, 84-87, 89-93, 95 and 98, as being unpatentable under 35 U.S.C. §103 over Andersson (EP 0207024 A2) in view of Lehnert (WO 89/05221 A1). Applicants respectfully traverse.

Andersson relates to a method of gluing a laminate using an adhesive whereby resin and hardener are applied separately to the joint area (e.g., laminate surface), preferably in the form of separate parallel strands. To solve the problem of bleeding from the glue joint, Anderson employs a resin component that has limited water dilutability, preferably a resorcinol-formaldehyde or resorcinol-phenolformaldehyde adhesive.

Thus, the problem addressed by Andersson is unwanted bleeding of adhesive from the joint areas. This can occur, for example, if the laminate is used in an outdoor environment exposed to rain and the glue joints become wet. Andersson teaches the use of separate application of resin and hardener, while advantageous in many respects, has the disadvantage that the components may not be completely mixed. This is because mixing necessarily occurs only on the laminate surface after the separate adhesive components have been applied. If the components are not distributed evenly on the surface, then mixing is incomplete, resulting in unreacted liquid component within the glue joint. If the laminate becomes wet, the liquid resin will dissolve in the water and bleed out (see Andersson at page 1, line 30 et seq.).

Applicants respectfully submit that they are unaware of any disclosure, teaching or suggestion by Andersson of using an amino resin adhesive system, as claimed. In fact, the Office Action (dated January 14, 2005, at p. 11) acknowledges that Anderson "does not teach that the gluing system is an amino resin gluing system or feeding the amino resin and hardener components to at least first and second orifices, respectively."

The Office Action, however, contends that it would have been obvious to one of ordinary skill in the art to modify Anderson by substituting an amino adhesive system for the adhesive system of Anderson based on the teachings of Lehnert. Applicants respectfully disagree.

Lehnert is directed to a method for producing wood products such as plywood, and is particularly directed to an improved cold pressing technique for pre-pressing a package of veneer. The proposed improvement is a reduction in formaldehyde emissions by lowering the ratio of formaldehyde to resin in the adhesive composition. Normally, a lower ratio cannot be used because it reduces cold tack, but in Lehnert, this is compensated for by the application of a secondary hardener along the edges of the veneer. The secondary hardener (along the edges) reacts quickly with the resin and holds the veneer together, eliminating the need for cold tack in the primary adhesive composition. Lehnert mentions that both phenol and amino resins can be used in the manufacture of plywood. See page 1, lines 28-31. The teaching of using a secondary hardener is applicable to "conventional" formaldehyde based, curable adhesives, including both phenol and amino resin adhesives. See page 3, line 37 to page 4, line 7.

Applicants respectfully submit that it would not be obvious to modify Anderson and substitute an amino resin for use in the processes of Anderson. In that regard, Applicants respectfully submit that Lehnert merely discloses that both conventional phenol and amino resins are generally used to bond wood in the manufacture of plywood. However, Anderson teaches that when the hardener and resin is applied in separate strands, it is critical for the unreacted resin component to have limited water dilutability to avoid the problem of bleeding (See abstract; and p. 1, line 29 – p.2, line 11). Applicants respectfully submit that conventional MF and MUF resins are prepared using water and that such (unreacted) resins are readily dilutable with water. Accordingly, it is respectfully submitted that Anderson teaches away from using conventional MF and MUF resins, as disclosed by Lehnert. Further, it is respectfully submitted that using conventional MF and MUF resins that are readily dilutable in water would destroy the intended function of the Anderson invention, which would teach away from such a modification. See *In re Gordon*, 733 F.2d 900, 902 (Fed. Cir. 1984).

Moreover, Applicants respectfully submit that it was the general opinion of one skilled in the art (at the time of the invention) that acid hardeners could not effectively be used in resin systems for producing gluelams or laminated timber, as the acid would cause deterioration in the wood, resulting in bonds failing, and would negatively effect the structural integrity of the

gluelam structural beam. See *Acid Deterioration of Glulam Beams in Buildings*; *Concise Encyclopedia of Wood & Wood-Based Materials* at p.12, first ¶; *Principles of Wood Science and Technology* at p.62, 2<sup>nd</sup> ¶ and p.63, 4<sup>th</sup> ¶ (all filed concurrently with this Response in a Supplemental IDS).

When evaluating the obviousness of a particular invention, the law requires consideration of the "whole" of the prior art. See *In re Keller*, 642 F.2d 413, 425 (CCPA 1981). In the instant application, Applicants respectfully submit that when the prior art is considered as a whole, it would not be obvious to practice the presently claimed methods, since the art as a whole teaches away from using acid hardeners for gluelams or laminated timber.

Applicants submit that, by practicing the methods as presently claimed, it has been found that acid hardeners can be used which provide unexpectedly good bonding characteristics. In that regard, a review of Example 1 reveals lower delamination when the amount of filler is below 20% in the adhesive, as presently claimed. Neither Andersson nor Lehnert recognize this unexpected result, and neither reference provides any disclosure, teaching or suggestion of the significance of filler levels on delamination rates.

Accordingly, based on the above, it is respectfully requested that the rejection of claims 39, 41-45, 56-59, 70-76, 78-82, 84-87, 89-93, 95 and 98 under 35 U.S.C. §103(a), as being obvious over Andersson, in view of Lehnert, be withdrawn.

On pages 7-8, the Office Action rejects claims 46, 83, 88, 96 and 97 as being unpatentable under 35 U.S.C. §103 based on Andersson, in view of Lehnert, and further in view of Perciwall (EP 0016740 A1). Applicants respectfully traverse.

Perciwall is cited for teaching the alleged equivalency of formic acid with various other acids for use as hardeners in amino acid systems. However, the above noted defects in the combination of Andersson and Lehnert are not overcome by the addition of Perciwall.

Accordingly, it is respectfully requested that the rejection of claims 46, 83, 88, 96 and 97, based on Andersson, Lehnert and Perciwall, be withdrawn.

On page 8, the Office Action rejects claims 40 and 77 as being unpatentable under 35 U.S.C. §103 based on Andersson in view of Lehnert, and further in view of Menger (US 2,015,806). Applicants respectfully traverse.

As claims 40 and 77 were previously cancelled, it is respectfully submitted that this rejection is now moot. Accordingly, it is respectfully requested that the rejection of claims 40 and 77, based on Andersson, Lehnert and Menger, be withdrawn.

On pages 8-9, the Office Action rejects claims 60-64 and 66-69 as being unpatentable under 35 U.S.C. §103 based on Andersson, in view of Lehnert and Toshio (JP 61-040137). Applicants respectfully traverse.

Toshio is cited for teaching the application of adhesive components in strands. Again, however, Applicants respectfully submit that its combination with Andersson and Lehnert does not address the above noted defects in combining these two references. Hence, Applicants respectfully submit that claims 60-64 and 66-69 are patentable over this combination of references.

Accordingly, it is respectfully requested that the rejection of claims 60-64 and 66-69, based on Andersson, Lehnert and Toshio, be withdrawn.

On page 8, the Office Action rejects claim 65 as being unpatentable under 35 U.S.C. §103 based on Andersson, in view of Lehnert and Toshio, and further in view of Perciwall. Applicants respectfully traverse.

Applicants respectfully submit that the above noted defects in the combination of Andersson and Lehnert are not overcome by the addition of Perciwall and Toshio. Hence, claim 65 is not rendered obvious by the combined teaching of these references.

Accordingly, it is respectfully requested that the rejection of claim 65, based on Andersson, Lehnert and Toshio, be withdrawn.

On page 8, the Office Action rejects claim 95 as being unpatentable under 35 U.S.C. §103 based on Andersson, in view of Lehnert and Perciwall. Applicants respectfully traverse.

Despite the addition of Perciwall, Applicants submit that the above noted defects in the combination of Andersson and Lehnert are not overcome by the addition of Perciwall. Hence, it is respectfully submitted that claim 95 is not rendered obvious by the combined teaching.

Accordingly, it is respectfully requested that the rejection of claim 95, based on Andersson, Lehnert and Perciwall, be withdrawn.

Double Patenting Rejections:

On pages 9-10, the Office Action rejects claims 70 and 76 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 9 and 18 of US Pat. No. 6,734,275 B2 to Pirhonen et al, in view of Andersson. Applicants respectfully traverse.

The '275 patent claims are directed to methods of gluing wood and include applying (separately in claims 1 and 18) an amino resin and a hardener that includes an acid.

Applicants respectfully submit that the cited claims from the '275 patent do not overcome the deficiencies with respect to Anderson as discussed above. Thus, for the reasons discussed above with respect to Andersson and Lehnert, Applicants respectfully submit that the invention, as presently claimed in claims 70 and 76 is patentable over the combination of the '275 patent (claims 1, 9 and 18), in view of Andersson.

Accordingly, it is respectfully requested that the rejection of claims 70 and 76, based on the '275 patent and Andersson, be withdrawn.

On page 10, the Office Action rejects claim 94 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 9 and 18 of the '275 patent, in view of Perciwall and Andersson. Applicants respectfully traverse.

Despite the addition of Perciwall, Applicants submit that the above noted defects in the combination of the '275 patent and Andersson are not overcome by the addition of Perciwall. Hence, it is respectfully submitted that claim 94 is not rendered obvious by the combined teaching.

Accordingly, it is respectfully requested that the rejection of claim 94, based on the '275 patent, Perciwall and Andersson, be withdrawn.

**Conclusion:**

In light of the foregoing, Applicants respectfully submit that the application as amended is now in proper form for allowance, which action is earnestly solicited. If the Examiner has any questions relating to this Amendment or to this application in general, it is respectfully requested that the Examiner contact Applicants' undersigned attorney at the telephone number provided below.

Respectfully submitted,



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